Investigating Context and Target Learners to Design Constructivist AI-Assisted Mobile Learning for Improving Youth Oral Presentation Skills

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Abstract

This study aims to investigate the context and target group for developing a mobile learning system based on constructivist theory and AI-assisted tools to enhance oral presentation skills among youth. The research employs a mixed-methods approach, involving a sample of 250 youth aged 15–18 years old from diverse socio-economic backgrounds in Khon Kaen, Thailand. Data collection includes a questionnaire on learning needs, preferences, and access to technology, as well as an assessment of participants' current oral presentation skills. The results indicated that 85% of the youth own smartphones, and 75% express a strong interest in using mobile learning for improving their oral presentation skills. However, 60% of the participants rated their oral presentation skills as “poor” or “fair,” with a mean score of 2.5 out of 5 (SD = 0.8) on the assessment. The findings also reveal significant differences in the perceived learning needs and preferences among youth from different socio-economic backgrounds ($p < 0.05$). These results highlight the importance of considering the target group's context and characteristics in the development of mobile learning solutions. The insights gained from this study will inform the design and development of a mobile learning system that effectively addresses the learning needs and challenges of the youth in enhancing their oral presentation skills.

Keywords: mobile learning, constructivist theory, AI-assisted learning, oral presentation skills

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Introduction

Background and Rationale

English communication proficiency has become an essential competency for success in the globalized 21st century, serving as the primary medium for international business, academic discourse, and cross-cultural collaboration (Trilling & Fadel, 2009). Among communication competencies, oral presentation skills represent particularly challenging yet critical capabilities, requiring the integration of content knowledge, linguistic proficiency, delivery techniques, and audience engagement strategies (Brown & Abeywickrama, 2019). These skills have become increasingly crucial as globalization demands professionals who can articulate complex ideas across cultural and linguistic boundaries.

Thailand faces a persistent crisis in English communication proficiency that significantly undermines national competitiveness. According to the EF English Proficiency Index (2024), Thailand ranked 106th out of 116 countries with very low proficiency levels, positioning the country at 21st among 23 Asian nations. The National Educational Testing Service data reveals that Thai Grade 12 students scored averages of 23.44%, 26.19%, and 30.61% on the O-NET English examination from 2022–2024, with fewer than 50% achieving good-to-excellent levels. Notably, students in Northeastern Thailand consistently demonstrate the lowest regional scores, highlighting urgent needs for targeted interventions.

The integration of mobile learning technologies and artificial intelligence offers promising opportunities to address these challenges. Mobile devices enable anywhere-anytime learning experiences that can significantly increase exposure to English communication practice (Crompton, 2013). AI-powered systems can provide personalized feedback on multiple communication dimensions simultaneously, addressing limitations of traditional instruction where teachers cannot provide comprehensive individual feedback to all students (Garcia et al., 2023).

However, effective technology-enhanced learning solutions require thorough understanding of target users' contexts, needs, and characteristics. Constructivist learning theory emphasizes that meaningful learning occurs when instruction aligns with learners' prior knowledge, experiences, and authentic needs (Jonassen, 1999). Therefore, context analysis represents an essential preliminary phase in developing mobile learning innovations that can effectively serve diverse learner populations.

Research Purpose and Positioning

This context analysis study serves as the foundational phase (Phase 1) of a three-phase developmental research project aimed at designing, developing, and evaluating a mobile learning innovation based on constructivist theory integrated with AI-assisted tools for enhancing oral presentation skills among Thai youth. As Richey and Klein (2014) emphasize, effective instructional design requires thorough understanding of target users' contexts, needs, and characteristics before development begins. Therefore, this preliminary investigation systematically examines the current state of oral presentation instruction, learner characteristics, technology readiness, and stakeholder perspectives to inform subsequent design and development phases.

Research Question

Main Research Question

What contextual factors should inform the design of a mobile learning system based on constructivist theory integrated with AI-assisted tools to enhance oral presentation skills among Thai youth?

Sub-Questions

RQ 1: What are the current oral presentation proficiency levels and instructional contexts among Thai youth?
RQ 2: What technology access, digital literacy, and mobile learning readiness do Thai youth demonstrate?
RQ 3: What are the primary barriers, learning needs, and skill development priorities for oral presentation among Thai youth?
RQ 4: How do learning needs, technology readiness, and preferences differ across demographic characteristics (gender, grade level, socio-economic status)?
RQ 5: What contextual factors (infrastructure, policy support, pedagogical challenges) do teachers and administrators identify as critical for successful mobile learning implementation?

Literature Review

Oral Presentation Skills in EFL Contexts

Oral presentation represents a complex communicative competency within the "extensive speaking" category, involving sustained monologic discourse requiring organizational abilities, appropriate vocabulary usage, and varied grammatical structures (Brown & Abeywickrama, 2019). Morreale et al. (2015) define oral presentation skills as strategic, structured communicative acts intended to inform, persuade, or motivate specific audiences, emphasizing the cognitive requirements for message construction tailored to maximize audience comprehension. For English as a Foreign Language (EFL) learners, oral presentation becomes a complex integrated skill task that simultaneously tests rhetorical competence and practical command of the target language system (O'Rourke & Horgan, 2018). Assessment frameworks typically evaluate two primary domains: Language Proficiency (pronunciation, grammatical accuracy, fluency and coherence, lexical resource) and Presentation Performance (content and organization, delivery) (Beebe & Beebe, 2016; Lucas, 2015). The Common European Framework of Reference for Languages (CEFR) provides standardized descriptors for presentation abilities, with B1–B2 levels requiring speakers to "give clear, systematically developed presentations, with highlighting of significant points, and relevant supporting detail" (Council of Europe, 2001). Thailand's Basic Education Core Curriculum aligns with these international standards, targeting CEFR B1 level upon completion of upper secondary education.

Mobile Learning for Language Development

Mobile learning represents educational approaches utilizing portable computing devices to enable learning across multiple contexts, locations, and time periods (Sharples et al., 2007). Crompton (2013) defines mobile learning as "learning across multiple contexts, through

social and content interactions, using personal electronic devices," highlighting contextual flexibility, social interaction, and personalization as defining characteristics. Mobile-Assisted Language Learning (MALL) has demonstrated consistent positive effects on various language acquisition aspects. Recent systematic reviews of MALL research have found significant improvements in speaking fluency, accuracy, and confidence across diverse contexts (Li, 2022, 2023; Zhou, 2021). Research examining mobile learning effects on EFL learners' speaking skills has revealed positive impacts on speaking performance and strategy use (Cai & Zhang, 2023). Key affordances of mobile learning for language development include: ubiquitous access enabling practice beyond classroom constraints, multimedia capabilities supporting multimodal learning, recording and playback functions facilitating self-assessment, and connectivity enabling collaborative learning and peer feedback (Hwang et al., 2016; Kukulska-Hulme & Shield, 2008).

Constructivist Learning Theory

Constructivist learning theory emphasizes learners' active role in constructing knowledge through interaction with their environment, social collaboration, and reflective experiences. Vygotsky's (1978) social constructivism highlights that knowledge construction occurs through social interaction and cultural mediation, with the Zone of Proximal Development (ZPD) identifying optimal learning spaces where learners can achieve goals with appropriate scaffolding.

Jonassen's (1999) Constructivist Learning Environment (CLE) model identifies essential components for effective knowledge construction: problem-based learning tasks providing authentic challenges, diverse learning resources supporting exploration, collaboration tools enabling social knowledge construction, scaffolding providing adaptive support, and coaching offering personalized guidance. These principles align particularly well with oral presentation skill development, which requires authentic practice, feedback, and iterative improvement.

AI-Assisted Language Learning

Artificial intelligence applications in language education demonstrate significant potential for enhancing speaking skills development. AI-powered systems can analyze multiple communication dimensions simultaneously, providing detailed feedback on pronunciation accuracy, fluency patterns, grammatical correctness, and even nonverbal communication elements. Educational chatbots serve multiple functions including information delivery, learning support, practice facilitation, and motivation enhancement (Winkler & Söllner, 2018). Research by Fryer et al. (2017, 2020) demonstrated that students using AI chatbots showed improved engagement and reduced speaking anxiety. Recent meta-analyses confirm that AI chatbots can effectively enhance language skills including speaking, while also boosting positive affect such as motivation, confidence, and willingness to communicate (Lyu et al., 2025).

Context Analysis in Educational Technology Development

Effective educational technology development requires thorough understanding of target users' characteristics, needs, and constraints (Richey & Klein, 2014). Context analysis encompasses learner characteristics (demographics, prior knowledge, attitudes), instructional context (current practices, resources, constraints), and environmental factors (infrastructure,

policy support, stakeholder perspectives). This systematic investigation serves as the foundation for design decisions in developmental research. Research consistently demonstrates that technology interventions designed without adequate context consideration often fail to achieve intended outcomes (Hannafin & Land, 1997). Constructivist design principles specifically emphasize alignment between learning experiences and learners' authentic needs, prior experiences, and meaningful goals (Duffy & Jonassen, 2013). In developmental research frameworks, context analysis constitutes Phase 1, providing essential data for Phase 2 (design and development) and Phase 3 (implementation and evaluation) (Richey & Klein, 2014).

For mobile learning innovations targeting specific populations, context analysis must examine:

1. current proficiency levels and instructional practices that establish baseline conditions,
2. technology infrastructure and digital literacy that determine feasibility,
3. identified barriers and learning needs that the innovation must address,
4. demographic variations requiring personalization features, and
5. stakeholder perspectives ensuring practical implementation viability.

This comprehensive understanding enables designers to create contextually appropriate solutions that effectively serve diverse learner populations.

Methodology

Research Design

This study employed a mixed-methods cross-sectional survey design as Phase 1 of a developmental research project. The design integrated quantitative questionnaire data with qualitative open-ended responses to comprehensively investigate contextual factors informing mobile learning design. As Richey and Klein (2014) note, developmental research requires systematic context analysis before design and development phases. This preliminary investigation provides essential data to answer the overarching question: What contextual factors should inform the design of a mobile learning system based on constructivist theory integrated with AI-assisted tools to enhance oral presentation skills among Thai youth?

Participants

Student Sample

The target population comprised Thai youth aged 15–18 years enrolled in upper secondary education (Grades 10–12) in Khon Kaen Province, Thailand. Using Krejcie and Morgan's (1970) sample size determination table at 95% confidence level, a minimum sample of 384 participants was initially targeted. The final analyzed sample included 250 students who provided complete responses, representing diverse socio-economic backgrounds.

Participants were recruited through multi-stage cluster sampling. First, Khon Kaen Province was selected as representative of diverse socio-economic conditions in Thailand. Within the province, schools were randomly selected, and student participants were recruited through classroom announcements.

Socio-economic status (SES) was categorized based on parental education and household income indicators into three levels: low, medium, and high. This classification enabled analysis of learning need differences across socio-economic backgrounds.

Teacher and Administrator Samples

Purposive sampling was employed to recruit 20 English as a Foreign Language (EFL) teachers with minimum five years' teaching experience at secondary level, and 5 school administrators holding positions as directors, deputy directors, or department heads with minimum two years' administrative experience. These participants represented schools within Khon Kaen Province.

Instruments

Three contextual survey instruments were developed based on literature review and aligned with the research objectives.

Student Contextual Survey

The 26-item student questionnaire comprised five sections:

1. Demographics and English Background (4 items): gender, age, grade level, years of English learning experience
2. Learning Context and Methods (6 items): English learning sources, presentation skill instruction experiences, perceived importance of presentation skills, current instructional approaches
3. Barriers and Skill Interests (6 items): Five-point Likert scale (5 = most significant barrier, 1 = not a barrier) assessing six barrier types; ranking task for skill development priorities across six presentation skill dimensions
4. Technology Readiness (5 items): device ownership, internet usage frequency, online learning platform familiarity, digital tool experience
5. Innovation Needs and Expectations (5 items): desired app features, learning format preferences, interest in mobile learning innovation

Self-assessment of oral presentation skills used a single-item five-point scale (1 = very poor, 5 = excellent).

Teacher Contextual Survey

The 22-item teacher questionnaire assessed: demographics and teaching experience, current instructional methods and materials, assessment practices, teaching challenges, technology readiness and usage, AI tool perceptions, and skill development priorities.

Administrator Contextual Survey

The 18-item administrator questionnaire examined: institutional demographics, policy alignment with communication skill development, infrastructure readiness, innovation support capacity, and willingness to participate in pilot programs.

Instrument Validation

Content validity was established through expert review by three specialists in educational technology, English language teaching, and measurement/evaluation. The Item-Objective Congruence (IOC) index was calculated, with items scoring below 0.5 revised or eliminated. The final instruments achieved IOC indices ranging from 0.67 to 1.00 across all items.

Internal consistency reliability was assessed through pilot testing with 30 students, 10 teachers, and 3 administrators not included in the main study. Cronbach's alpha coefficients for multi-item scales ranged from 0.78 to 0.89, indicating acceptable to good reliability.

Data Collection Procedures

Student surveys were administered in classroom settings with researcher supervision. Teacher and administrator surveys were distributed through school coordinators with two-week return periods. All participants provided informed consent, with parental consent obtained for participants under 18 years.

Data Analysis

Quantitative data were analyzed using SPSS version 28. Descriptive statistics (frequencies, percentages, means, standard deviations) characterized sample demographics, technology access, barriers, and learning needs. Independent samples t-tests and one-way ANOVA examined differences in learning needs across demographic variables (gender, grade level, SES). Chi-square tests assessed associations between categorical variables. Statistical significance was set at $p < 0.05$.

Qualitative responses to open-ended questions were analyzed using thematic content analysis, with responses coded and categorized into emergent themes related to learning needs, barriers, and innovation expectations.

Results

Participant Characteristics

Student Demographics

Table 1 presents student demographic characteristics. The sample comprised 250 students with relatively balanced gender distribution (44.8% male, 52.0% female, 3.2% other/not specified). Age ranged from 15–18 years (M = 16.4, SD = 0.9). Grade distribution included Grade 10 (30.8%), Grade 11 (34.0%), and Grade 12 (35.2%). Mean years of English learning experience was 10.2 years (SD = 2.1).

Table 1
Student Demographic Characteristics (N = 250)

Variable	n	%
Gender		
Male	112	44.8
Female	130	52.0
Other/Not specified	8	3.2
Grade Level		
Grade 10	77	30.8
Grade 11	85	34.0
Grade 12	88	35.2
Socio-Economic Status		
Low	82	32.8
Medium	108	43.2
High	60	24.0

Teacher and Administrator Demographics

The teacher sample (N = 20) comprised predominantly female participants (75%), with teaching experience ranging from 5–25 years (M = 12.3, SD = 5.7). Sixty percent held master's degrees. All administrators (N = 5) had minimum two years' experience in current positions, representing schools ranging from 500 to over 2,000 students.

Current State of Oral Presentation Instruction

Student Experiences

Regarding prior presentation skill instruction, 72.4% of students reported having some experience with English oral presentation practice in classrooms. However, frequency was limited, with most (58.3%) indicating presentation assignments occurred only 1–2 times per semester.

Current instructional approaches reported by students included: group presentations (68.4%), individual presentations (54.8%), lecture-based instruction with exercises (47.2%), role-playing activities (32.0%), and digital media integration (28.8%). Multiple responses were permitted.

Students' perceived importance of oral presentation skills was high, with 78.4% rating these skills as “important” or “very important” for their future. Similarly, 75.2% expressed “high” or “very high” interest in learning and practicing presentation skills.

Teacher Perspectives

Teachers reported using various instructional methods: collaborative learning (75%), lecture-based instruction (65%), hands-on practice (60%), and technology-enhanced approaches (40%). Media commonly used included textbooks (90%), YouTube/TED Talk videos (70%), self-created materials (55%), and digital resources from internet (50%). Regarding assessment practices, teachers employed observation during presentations (85%), rubric-based scoring (65%), peer assessment (40%), and self-assessment (35%). Only 30% reported using standardized assessment criteria aligned with international frameworks. Teachers rated

their current instructional effectiveness for developing presentation skills as moderate (M = 3.1 out of 5, SD = 0.7), with only 25% rating effectiveness as "high" or "very high."

Self-Assessment of Oral Presentation Skills

Students' self-assessed oral presentation skill levels revealed substantial deficits. The mean self-assessment score was 2.5 out of 5 (SD = 0.8), with 60% of participants rating their skills as "poor" (score 1–2) or "fair" (score 3). Only 15.2% rated their skills as "good" (score 4) or "excellent" (score 5).

Table 2
Self-Assessment of Oral Presentation Skills (N = 250)

Rating	Score	n	%
Very Poor	1	28	11.2
Poor	2	74	29.6
Fair	3	98	39.2
Good	4	38	15.2
Excellent	5	12	4.8

Note. M = 2.5, SD = 0.8

Technology Access and Readiness

Device Ownership and Internet Access

Technology access among participants was high. Smartphone ownership reached 85.2% (n = 213), with additional device ownership including notebooks/laptops (42.4%), tablets (24.8%), and desktop computers (18.4%). Most students (68.0%) reported using internet for educational purposes daily or 5–6 days per week.

Table 3
Technology Access and Usage Patterns (N = 250)

Variable	n	%
Device Ownership		
Smartphone	213	85.2
Notebook/Laptop	106	42.4
Tablet	62	24.8
Desktop Computer	46	18.4
Internet Usage for Education		
Daily	98	39.2
5–6 days/week	72	28.8
3–4 days/week	48	19.2
1–2 days/week	25	10.0
Never	7	2.8

Digital Learning Tool Experience

Students reported familiarity with various digital learning tools: Google Translate (92.4%), YouTube for learning (87.6%), Duolingo (45.2%), AI chatbots such as ChatGPT (38.8%), Grammarly (28.4%), and ELSA Speak (18.0%). Regarding frequency of using online

resources specifically for English presentation learning, 42.0% reported “sometimes” to “often,” while 34.4% reported “rarely” and 23.6% reported “never.”

Barriers to Oral Presentation Skill Development

Students rated six potential barriers on a five-point scale (5 = most significant barrier). Table 4 presents mean barrier ratings.

Table 4

Perceived Barriers to Oral Presentation Skill Development (N = 250)

Barrier	M	SD	Rank
Anxiety and nervousness speaking before others	4.21	0.89	1
Limited vocabulary and word choice difficulties	3.87	0.94	2
Grammatical accuracy and sentence structure problems	3.72	0.91	3
Lack of detailed feedback for improvement	3.65	1.02	4
Limited practice opportunities outside classroom	3.58	1.08	5
Lack of knowledge about presentation structure	3.42	0.97	6

Note. Scale: 1 = not a barrier, 5 = most significant barrier

Speaking anxiety emerged as the most significant barrier (M = 4.21, SD = 0.89), followed by vocabulary limitations (M = 3.87, SD = 0.94) and grammatical difficulties (M = 3.72, SD = 0.91). All barriers received mean ratings above the scale midpoint, indicating multiple challenges faced by learners.

Teachers similarly identified key instructional challenges. Using the same five-point scale, teachers rated: student motivation deficits (M = 3.95), diverse proficiency levels within classrooms (M = 3.80), time constraints for complex language activities (M = 3.70), and limited opportunity for individualized feedback (M = 4.10).

Skill Development Priorities

Students ranked their interest in developing six oral presentation skill dimensions. Table 5 presents mean rank scores (lower scores indicate higher priority).

Table 5

Student Skill Development Priority Rankings (N = 250)

Skill Dimension	Mean Rank	SD
Fluency and Coherence	2.34	1.42
Pronunciation	2.67	1.51
Content and Organization	3.12	1.38
Delivery and Body Language	3.45	1.47
Lexical Resource	3.89	1.52
Grammatical Accuracy	4.53	1.44

Fluency and coherence emerged as students' top priority (Mean Rank = 2.34), followed by pronunciation (2.67) and content organization (3.12). Grammatical accuracy ranked lowest (4.53), suggesting students prioritize communicative effectiveness over linguistic precision.

Teachers' skill development priorities differed somewhat, with content and organization ranked highest, followed by fluency and grammatical accuracy. This discrepancy suggests potential misalignment between student interests and teacher instructional emphases.

Differences Across Demographic Variables

Socio-Economic Status Differences

One-way ANOVA revealed significant differences in perceived barriers and learning needs across socio-economic status groups.

Table 6
Differences in Key Variables by Socio-Economic Status

Variable	Low SES (n = 82)	Medium SES (n = 108)	High SES (n = 60)	F	p
	M (SD)	M (SD)	M (SD)		
Self-assessed skill level	2.21 (0.74)	2.52 (0.79)	2.88 (0.82)	12.47	<.001
Speaking anxiety	4.45 (0.78)	4.18 (0.87)	3.92 (0.96)	6.83	.001
Technology readiness	3.12 (0.89)	3.68 (0.76)	4.21 (0.68)	29.54	<.001
Interest in mobile learning	4.02 (0.82)	4.15 (0.74)	4.08 (0.79)	0.67	.512

Note. All scales 1–5; higher scores indicate higher levels of the measured construct.

Significant differences emerged in self-assessed skill level ($F = 12.47$, $p < .001$), with low-SES students reporting lower proficiency ($M = 2.21$) than medium-SES ($M = 2.52$) and high-SES peers ($M = 2.88$). Speaking anxiety was significantly higher among low-SES students ($M = 4.45$) compared to high-SES students ($M = 3.92$; $F = 6.83$, $p = .001$).

Technology readiness showed the largest differences ($F = 29.54$, $p < .001$), with high-SES students demonstrating substantially greater readiness ($M = 4.21$) than low-SES peers ($M = 3.12$). However, interest in mobile learning did not differ significantly across groups ($F = 0.67$, $p = .512$), suggesting universal appeal of mobile learning approaches.

Post-hoc Tukey tests confirmed that low-SES students differed significantly from both medium and high-SES groups on skill self-assessment ($p < .05$), while only low versus high-SES comparisons reached significance for speaking anxiety.

Gender and Grade Level Differences

Independent samples t-tests revealed female students reported significantly higher speaking anxiety ($M = 4.32$, $SD = 0.85$) than male students ($M = 4.02$, $SD = 0.92$; $t(240) = 2.67$, $p = .008$, $d = 0.34$). No significant gender differences emerged for skill self-assessment or mobile learning interest.

One-way ANOVA showed no significant differences across grade levels for most variables. However, Grade 12 students reported significantly higher perceived importance of presentation skills ($M = 4.35$) compared to Grade 10 students ($M = 3.98$; $F = 3.42$, $p = .034$), possibly reflecting approaching university entrance and career considerations.

Mobile Learning Feature Expectations

Students selected desired features for AI-integrated mobile learning applications (multiple selections permitted). Table 7 presents feature preferences.

Table 7
Desired Mobile Learning Application Features (N = 250)

Feature	n	%
Real-time feedback and suggestions	198	79.2
Knowledge repository with model presentations	185	74.0
Automatic pronunciation and fluency assessment	176	70.4
Peer feedback and collaboration functions	142	56.8
Virtual practice room/simulation	138	55.2
Gesture and eye contact analysis via camera	87	34.8

Real-time AI feedback (79.2%) and access to model presentations (74.0%) were most frequently selected, followed by automated pronunciation assessment (70.4%). Camera-based gesture analysis was less popular (34.8%), possibly reflecting privacy concerns or unfamiliarity with such technology.

Students rated the importance of five learning formats for potential inclusion in the mobile learning application. Problem-based learning received moderate-high ratings (M = 3.72), AI-assisted detailed feedback was rated highest (M = 4.28), simulation and role-playing was moderate (M = 3.65), collaborative online teamwork was moderate (M = 3.48), and comprehensive resource access was moderate-high (M = 3.89).

Infrastructure and Support Readiness

Teacher Perspectives

Teachers assessed institutional technology readiness as moderate. Wi-Fi availability and stability received mixed ratings (M = 3.2 out of 5, SD = 0.9). Teachers reported using technology in instruction: 20% every class, 35% weekly, 25% 2–3 times monthly, and 20% rarely or never.

Primary barriers to technology integration included: insufficient reliable equipment (45%), lack of technology skills/knowledge (25%), concerns about reduced student-teacher interaction (15%), and curriculum misalignment (15%).

Regarding AI tools, 75% of teachers rated AI-assisted feedback as “beneficial” or “very beneficial” for presentation skill development. Specific AI features rated most helpful included automated pronunciation/fluency feedback (M = 4.15), grammar and vocabulary checking (M = 4.05), student self-practice systems (M = 3.95), and video-based nonverbal analysis (M = 3.45).

Administrator Perspectives

Administrators' policy alignment ratings indicated moderate-strong support for English communication skill development as institutional priority (M = 4.2), teacher innovation

encouragement mechanisms (M = 3.8), digital literacy promotion policies (M = 3.6), and plans for AI integration in instruction (M = 3.4).

Infrastructure readiness varied: internet coverage and stability (M = 3.4), computer lab adequacy (M = 3.2), BYOD (Bring Your Own Device) policy support (M = 3.6), and budget allocation for educational software (M = 2.8).

All five administrators expressed willingness to participate in pilot programs, with three indicating "very willing" and two indicating "willing." Expected positive impacts included increased student self-directed practice opportunities (M = 4.4), teacher time freed for deeper consultation (M = 4.0), institutional innovation leadership image (M = 3.8), and student anxiety reduction (M = 4.2).

Summary of Quantitative Findings

Table 8

Summary of Key Findings

Finding Area	Key Result
Sample location	Khon Kaen, Thailand
Smartphone ownership	85.2%
Interest in mobile learning for presentation skills	75.2% high/very high
Self-assessed presentation skills "poor" or "fair"	60.0%
Mean skill self-assessment	M = 2.5 (SD = 0.8)
Primary barrier	Speaking anxiety (M = 4.21)
Top skill priority	Fluency and coherence
Most desired app feature	Real-time AI feedback (79.2%)
SES differences in learning needs	Significant ($p < .05$)
Teacher-perceived AI benefit	75% beneficial/very beneficial
Administrator pilot willingness	100% willing

Discussion

This study systematically investigated the contextual factors essential for designing a mobile learning (m-learning) system grounded in constructivist theory and Artificial Intelligence (AI) to enhance the oral presentation skills of Thai youth. By addressing five interconnected research questions, this investigation establishes a data-driven foundation for Phase 2 of this developmental research.

A significant knowing-doing gap was identified: while 78.4% of students value oral presentation skills, 60% rated their proficiency as "poor" or "fair" (M = 2.5/5.0). Traditional classroom constraints-large cohorts and limited time-restrict practice to only 1–2 sessions per semester. This underserves the pedagogical requirement for distributed, iterative practice necessary for speaking proficiency (Dempster, 1988).

Technologically, the high smartphone ownership (85.2%) and universal interest in m-learning confirm the viability of a mobile-first solution. However, significant socio-economic status (SES) differences in technology readiness ($F = 29.54$, $p < .001$) highlight a digital divide. While familiarity with generative AI (e.g., ChatGPT) is growing (38.8%), usage of specialized language-learning AI (18.0%) remains low. These findings dictate that the

platform must be optimized for low-data environments with intuitive interfaces to ensure equitable access across varying digital literacy levels.

Speaking anxiety emerged as the most significant barrier to development (M = 4.21), consistent with Horwitz et al.'s (1986) findings on foreign language anxiety. This necessitates the design of "psychologically safe" practice spaces. AI-assisted tools offer non-judgmental environments that reduce the fear of public embarrassment, thereby increasing the willingness to communicate (Fryer et al., 2020).

A notable discrepancy was found between student and teacher priorities: students prioritize fluency and coherence, whereas teachers focus on rhetorical structure and grammatical accuracy. To address this, the m-learning design must synthesize these needs through integrated scaffolding (Wood et al., 1976). This includes delivering real-time AI feedback (prioritized by 79.2% of students) and providing "just-in-time" vocabulary and grammar support within authentic, problem-based presentation tasks.

Significant SES differences across anxiety levels and readiness suggest that technology interventions risk exacerbating inequality unless designed for inclusivity. Low-SES students reported higher anxiety (M = 4.45) and lower skill self-assessments. Consequently, the design framework prioritizes adaptive difficulty and enhanced scaffolding for vulnerable populations.

Institutional feasibility is supported by a 75% teacher approval rate for AI-assisted feedback and 100% administrator willingness to host pilot programs. However, sustainability remains a challenge, as budget allocations for educational software are notably low (M = 2.8). For successful adoption, the innovation must demonstrate cost-effectiveness and seamless alignment with existing curricula.

The findings culminate in an integrated design framework (Table 1) that maps contextual data to the components of a Constructivist Learning Environment (Jonassen, 1999):

Table 9

Integrated Design Framework: Contextual Findings to Design Decisions

Research Question	Key Findings	Design Implications
RQ1: Proficiency & Context	60% poor/fair skills (M = 2.5); 1–2 presentations/semester	Graduated difficulty; unlimited practice; CEFR-aligned progression
RQ2: Technology Readiness	85.2% smartphones; varied digital literacy; SES gaps in readiness	Mobile-optimized; intuitive interface; offline mode; minimal data use
RQ3: Barriers & Needs	Speaking anxiety (M = 4.21); vocabulary/grammar gaps; fluency priority	Private practice spaces; AI non-judgmental feedback; integrated language support
RQ4: Demographic Differences	Significant SES differences ($p < .05$); higher anxiety in low-SES/females	Adaptive difficulty; free access; enhanced scaffolding for vulnerable groups
RQ5: Stakeholder Factors	75% teachers support AI; infrastructure limitations; curriculum alignment needed	Teacher dashboard; curriculum-aligned; cost-effective; automated assessment

Conclusion

This context analysis study demonstrates that effective educational technology development requires rigorous preliminary investigation over "technology-first" approaches. As Phase 1 of a three-phase developmental project, this study establishes the theoretical and practical groundwork for creating an innovation that is contextually appropriate for Thai youth and pedagogically grounded in Vygotsky's Zone of Proximal Development (ZPD).

By synthesizing learner characteristics, psychological barriers, and stakeholder perspectives, we have developed a framework for an AI-assisted m-learning system that offers a scalable solution to Thailand's English communication challenges. The subsequent phases will focus on transforming these design implications into a functional prototype (Phase 2) and evaluating its empirical effectiveness (Phase 3), contributing to the global understanding of how AI can be leveraged to democratize high-stakes skill development in developing educational contexts.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that Grammarly, an AI-assisted writing software, was used in proofreading and refining the language used in the manuscript. The usage was limited to correcting grammatical and spelling errors and rephrasing statements for accuracy and clarity. The ideas, design, procedures, findings, analyses, and discussion are originally written and derived from careful and systematic conduct of the research.

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